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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/831,617	09/19/2001	Stefan Bahrenburg	12758-035001	5921

7590 01/18/2005  
Fish & Richardson  
225 Franklin Street  
Boston, MA 02110-2804

EXAMINER
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HAILE, FEBEN

ART UNIT	PAPER NUMBER
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2663

DATE MAILED: 01/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/831,617

Applicant(s)

BAHRENBURG ET AL.

Examiner

Feben M Haile

Art Unit

2663

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 19 September 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5, 6 and 8 is/are rejected.
- 7) ☒ Claim(s) 4, 7 and 9 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date Sept. 9, 2001
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Specification***

1. The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

### **Arrangement of the Specification**

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC (See 37 CFR 1.52(e)(5) and MPEP 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text are permitted to be submitted on compact discs.) or  
REFERENCE TO A "MICROFICHE APPENDIX" (See MPEP § 608.05(a). "Microfiche Appendices" were accepted by the Office until March 1, 2001.)
- (e) BACKGROUND OF THE INVENTION.
  - (1) Field of the Invention.
  - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (f) BRIEF SUMMARY OF THE INVENTION.
- (g) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (h) DETAILED DESCRIPTION OF THE INVENTION.
- (i) CLAIM OR CLAIMS (commencing on a separate sheet).
- (j) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
- (k) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

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2. The disclosure is objected to because of the following informalities: on page 2, an indication is made to claims 1 and 8. Reference to claims cannot be made in the disclosure. Appropriate correction is required.

3. The disclosure is objected to because of the following informalities: on page 11, a reference is made to the virtual spread code "c51" of figure 4 but this figure does not include character "c51". Appropriate correction is required.

#### ***Claim Objections***

4. Claim 1 is objected to because of the following informalities: the preamble of this claim refers to the transmission side of the system but the body of the claim makes reference to both the transmitting and receiving ends. A suggestion of replacing the word "transmitting" to "communicating" within the preamble is noted. Appropriate correction is required.

#### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-3 and 5-6 rejected under 35 U.S.C. 102(b) as being anticipated by Uesugi et al (US 6,259,721), hereinafter referred to as Uesugi.

**Regarding claim 1**, Uesugi discloses the limitations: transmitting signals from at least two data streams having data symbols spread by spread codes, the signals being transmitted at the same time in one channel, wherein different spread factors are used for the signals (column 1 lines 18-20); forming a virtual spread code for a symbol in one of the signals having a spread factor which is less than a maximum spread factor (see figure 5 units 230 & 231, 6 unit S7 and column 7 lines 28-32); detecting the one of the signals using the virtual spread code (see figure 6 unit S4 and column 7 lines 2-22); and arranging detection results to form a data stream that corresponds to the one of the signals (see figure 5 units 220 & 223).

**Regarding claim 2**, Uesugi discloses that a spreading code is used for data that has a low spreading factor (see figure 5 units 230 & 231, 6 unit S7 and column 7 lines 28-32). It would be inherently known that the spread code could be changed for every new symbol in the data.

**Regarding claim 3**, Uesugi discloses the limitation: wherein changing the virtual spread code comprises splitting the virtual spread code (the spread code used for low spreading factors is split between the spreading factor or 2 & 4; see figure 5 units 230 & 231).

**Regarding claim 5**, Uesugi discloses the limitation: wherein detecting is performed using a detection device designed for a number of channels that corresponds to a number of channels associated with the maximum spread factor (see figure 6 unit S2 and column 7 lines 12-19).

**Regarding claim 6**, Uesugi discloses the limitation: wherein the detection device performs detecting by eliminating at least one interference signal in the signals (see column 3 lines 36-41).

6. Claim 8 rejected under 35 U.S.C. 102(b) as being Mayer et al., hereinafter referred to as Mayer.

**Regarding claim 8**, Mayer discloses the limitations: at least one antenna for receiving signals (see figure 3); and a channel estimator for determining signal-specific channel impulse responses of at least two received signals in simultaneously transmitted data streams having data symbols spread by spread codes; wherein different spread codes are used for the at least two received signals (see figure and section II paragraph 1).

***Allowable Subject Matter***

7. Claims 4, 7, and 9 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

**Regarding claim 4**, the prior art fails to teach the limitation: wherein a length of the virtual spread code corresponds to a length of a symbol having the maximum spread factor.

**Regarding claim 7**, the prior art fails to teach the limitations: the data symbols are at least partially superimposed to form a received signal; the received signal is sampled and passed to a reception matrix', a system matrix contains values that are related to a signal-specific channel impulse responses, wherein (i) adjacent positions in the system matrix contain values of different signals, (ii) positions in the system matrix are aligned to correspond to superimpositions of the data symbols, and (iii) correspondingly more adjacent positions in the system matrix are provided for signals with lower spread factors; and detection is performed for data symbols in the at least two data streams, using the received signal, by linking the system matrix and the reception matrix.

**Regarding claim 9**, the prior art fails to teach the limitation: wherein a length of the virtual spread code corresponds to a length of a symbol having the maximum spread factor.

### ***Conclusion***

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

- a) Dent (US 2004/0252667), Receivers for Receiving Multi-Carrier Orthogonally Coded Signals
- b) Futagi (EP 898383), Digital Despreading and Weighting Receiver
- c) Hwang et al. (US 20040052236), Apparatus and method for joint detection receiving irrespective of orthogonal code length in mobile communication system

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Feben M Haile whose telephone number is (571) 272-3072. The examiner can normally be reached on 8:00am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Ngo can be reached on (571) 272-3139. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



**RICKY NGO**  
**PRIMARY EXAMINER**